Resolution and the binary encoding of combinatorial principles

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Abstract. We give lower bounds in Resolution-with-bounded-conjunction, Res(s), for families of contradictions where witnesses are given in the unusual binary encodings. The two families we focus on are the k-Clique Formulas and those associated with the (weak) Pigeonhole Principle. If one could give lower bounds in Res(log) for such families under the binary encoding, then these would translate to lower bounds for the more typical unary encoding in Resolution, Res(1). Such a lower bound is not possible for certain very weak Pigeonhole Principles, but might be dreamt of for the k-Clique Formulas.